

## REMARKS

The amendments set out above and the following remarks are believed responsive to the points raised by the Office Action dated June 25, 2002. In view of the amendments set out above and the following remarks, reconsideration is respectfully requested.

### The Pending Claims

Claims 1-5, 7-18, 20-22, 24-42 are currently pending and claims 34 and 35 have been withdrawn from consideration.

Several changes have been made in the specification to improve its form. These changes are essentially editorial in nature and do not constitute the addition of new matter.

Claims 36, 41, and 42 have been amended to describe the invention more clearly. No new matter has been added, the basis for the amended claim language may be found within the original specification, claims and drawings.

Separate documents setting forth the precise changes to the claims, as well as the text of all the pending claims (amended and non-amended), are enclosed herewith.

### The Office Action

For convenience, the following remarks will address the rejections in the same order they were raised in the Office Action.

The specification was objected to for failing to contain an abstract on a separate sheet. An abstract on a separate sheet is submitted herewith and therefore it is respectfully submitted that the rejection has now been overcome and should be withdrawn.

The specification was objected to as improperly incorporating essential material by reference to a foreign application or patent or to a publication. Applicants respectfully submit that the specification does not rely on any foreign applications, patents or publications, to provide essential material, but rather all essential material is clearly set forth in the specification and only non-essential matter is incorporated by reference to publications.

For example, the present specification refers to "Informational Brochure SD 872h G of Pall Filtrationstechnik GmbH, Germany," "Monthly Magazine for Breweries," and "Bradford, *Anal. Biochem.*, 72, 248-64 (1976)" merely to provide background information. Accordingly, Applicants submit that the specification does not improperly incorporate essential matter by reference to a foreign application, patent or to a publication and therefore the objection is improper and should be withdrawn.

The amendment filed December 20, 1999 was objected to under 35 U.S.C. §132 as introducing new matter. According to the Office Action, the amendments to the specification on pages 7, 8, 12, 13, 18, and 23 are not supported by the original disclosure.

In order to expedite matters, the above amendment to page 7, line 15 cancels the amendment made on December 20, 1999 to page 7 and renders the objection with respect to page 7 moot.

The December 20, 1999 amendment to page 8, line 27 changing "The expert" to "One of ordinary skill in the art" merely rephrases the passage to conform the specification to the U.S. patent practice of describing one competent to practice the present invention as "one of ordinary skill in the art" from the phrase "the expert," commonly used in other countries under the Patent Cooperation Treaty. Since this amendment merely rephrases that which was originally present in the disclosure it therefore does not constitute new matter. Applicants respectfully submit the objection is improper and should be withdrawn.

In order to expedite matters, the present amendment to page 12, line 13 cancels the amendment made on December 20, 1999 and renders the objection with respect to this amendment moot.

The December 20, 1999 amendment to page 12, line 22 inserting the word "partially" before the word "clogged" merely makes explicit that which was clearly implicit in the original disclosure and therefore does not constitute the addition of new matter. As the original disclosure makes clear at page 12, lines 23-25, and as persons of ordinary skill in the art would recognize, the membrane is not completely clogged, but rather is only partially clogged since filtrate is passing through the membrane (see also pages 7 and 8 describing halting filtration and cleaning a porous membrane when the porous membrane is not fully clogged). Accordingly, Applicants respectfully submit the amendment does not constitute the addition of new matter and the objection should be withdrawn.

The December 20, 1999 amendment to page 12, line 33 (as well as the present amendment to page 13, line 4) changing "set the pH" to "adjusted the pH" merely rephrases the passage to correct a translation error and reflect the more appropriate English language term for manipulating pH. According to Webster's II New Riverside University Dictionary, the definition of "set" includes "to adjust" and therefore this rephrasing does not change the meaning of the passage or constitute the addition of new matter. Thus, Applicants respectfully submit the objection is improper and should be withdrawn.

The December 20, 1999 amendments to page 23, lines 12 and 13 (as well as the present amendment to the paragraph beginning on page 23, line 13) merely correct obvious minor typographical errors in the original disclosure and do not introduce any matter that was not originally present in the disclosure. These amendments merely make the language of the

specification that follows Table 4, match the disclosure set forth in Table 4. Since Table 4 indicates the crystalline:soluble cellulose activity ratio at 60 minutes for Exocellulose derived from *Thermomonospora fusca* is 1.33 and the crystalline:soluble cellulose ratio at 60 minutes in Table 3 is not 1.33, one of ordinary skill in the art would clearly recognize that the original disclosure at page 23, line 16 stating the crystalline:soluble cellulose activity ratio at 60 minutes in Table 3 is 1.33 is an obvious minor typographical error. One of ordinary skill in the art would also clearly recognize that the disclosure should identify the source of the value as Table 4 for Exocellulose derived from *Thermomonospora fusca*, since the crystalline:soluble cellulose activity ratio at 60 minutes in Table 4 is 1.33. Accordingly, Applicants submit the amendments merely correct obvious minor typographical errors and thus do not constitute the addition of new matter. Therefore, it is submitted the objection is improper and should be withdrawn.

Claims 4, 5, 7-18, 20-22, 24-28 and 36-41 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. According to the Office Action, the above claims rely on the term "about" to define numerical ranges, the term about being a relative term, which renders the claims indefinite. This rejection is respectfully traversed.

Courts have repeatedly held claims employing the term "about" to be definite. See, for example, *Modine Mfg. Co. v. U.S. Intern. Trade Comm'n*, 75 F.3d 1545, 1554 (1996) (the term "about" can usually be understood in light of the technology embodied in the invention) and *Zoltek Corp.*, 48 Fed. Cl. at 300 ("The Court does not agree with Defendant's contention that a precise limit must always be attached to the term 'about'"). Thus it is submitted, the use of the term "about" in the present claims does not render the claims indefinite. One of ordinary skill in the art reading the claims in light of the specification and the technology embodied in the invention would understand the scope of the term "about" as used in the claims. Accordingly, Applicants submit the rejection is improper and should be withdrawn.

Claims 1-5, 7-15, 18, 20-22, 27, 28, 31, 33 and 37-42 were rejected under 35 U.S.C. §103(a) as being unpatentable over Japanese Patent No. 4267933 to Fuji Photo Film Co. Ltd. (hereinafter referred to as "Fuji") in view of Applicants' alleged admissions on pages 1-3 of the instant application. This rejection is respectfully traversed.

Neither Fuji nor Applicants (i.e., in the background section at pages 1-3 of the present specification) taken alone or in combination, disclose or suggest a method for producing beer including filtering beer through a porous membrane until such time that the porous membrane is in need of cleaning, contacting the porous membrane with an enzyme selected from the group consisting of cellulases, amylases and combinations thereof in the absence of a protease or a glucanase to clean the porous membrane, and reusing the porous membrane to continue filtering beer.

Fuji is merely directed to the separation, purification, recovery and concentration of suspended solids, rather than providing a drinkable beverage. In fact, Fuji does not even mention beer, let alone suggest a method for producing beer including filtering beer through a porous membrane until such time that the porous membrane is in need of cleaning, contacting the porous membrane with an enzyme selected from the group consisting of cellulases, amylases and combinations thereof in the absence of a protease or a glucanase to clean the porous membrane, and reusing the porous membrane to continue filtering beer.

Furthermore, Fuji merely discloses that, in the separation, purification, recovery and concentration of suspended solids, either a proteolytic enzyme or a cellulose-destroying enzyme or the combination may be used in a washing solution for the separation membrane, and makes no distinction at all between using one enzyme over another or a combination of enzymes over a single enzyme. Accordingly, one of ordinary skill in the art would not be led to the claimed invention in view of Fuji.

The background section of the present application (pgs 1-3) merely discloses that to prolong the life of a filter, manufacturers of membrane filters recommend cleaning the used membranes by treating them with proteases, glucanases, and xylanases, as well as with chemicals such as surfactants, acids/bases, and oxidizing agents to make them reusable (see e.g., page 2, lines 6-11).

Thus, there is simply nothing in Fuji or the background section of the present specification that would lead one of ordinary skill in the art a method for producing beer including filtering beer through a porous membrane until such time that the porous membrane is in need of cleaning, contacting the porous membrane with an enzyme selected from the group consisting of cellulases, amylases and combinations thereof in the absence of a protease or a glucanase to clean the porous membrane, and reusing the porous membrane to continue filtering beer. Accordingly, even assuming arguendo that one of ordinary skill in the art could be led from Fuji to the background section of the present specification, the combination would not lead one of ordinary skill in the art to the claimed invention.

As the present specification explains, it is the method for producing beer including filtering the beer through a porous membrane until such time that the porous membrane is in need of cleaning, contacting the porous membrane with an enzyme selected from the group consisting of cellulases, amylases and combinations thereof in the absence of a protease or a glucanase to clean the porous membrane, that produces the superior results of the invention. For example, as explained at page 5, lines 14-22, "It surprisingly has been discovered that porous membranes can be cleaned better and more gently with a cellulase and/or with an amylase than with proteases, xylanases, and/or glucanases." In view of the deficiencies of the teachings of Fuji as summarized above, it is submitted the rejection is based on impermissible hindsight using

Applicants' disclosure as a template to be filled in, and Applicants respectfully submit the obviousness rejection is improper and should be withdrawn.

Additionally, with respect to claim 4 and those claims depending therefrom, neither Fuji nor the background section of the present specification, taken individually, or in combination, teach or suggest a method for producing beer including filtering beer through a porous membrane until such time that said porous membrane is in need of cleaning and contacting the porous medium with a cellulase having a crystalline:soluble activity ratio at 60 minutes of at least about 0.1 and then reusing the porous membrane to continue filtering beer. The deficiencies of Fuji, and the improper basis for the rejection based on Fuji in view the background section of the present application, have been summarized above, and the comments are equally applicable here. Although the Office Action asserts that cellulase having a crystalline:soluble activity ratio at 60 minutes of at least about 0.1 is a parameter that those in the cleaning art would optimize to obtain the best result, no support for such an assertion has been provided. There is simply no teaching or suggestion in Fuji and pages 1-3 of the present specification leading one to a method for producing beer including filtering beer through a porous membrane until such time that said porous membrane is in need of cleaning and contacting the porous medium with a cellulase having a crystalline:soluble activity ratio at 60 minutes of at least about 0.1 and then reusing the porous membrane to continue filtering beer.

Accordingly, it is submitted the rejection is based on impermissible hindsight, and Applicants respectfully submit the obviousness rejection is improper and should be withdrawn.

Claims 16-17, 24 and 25 were rejected under 35 U.S.C. §103(a) as being unpatentable over Fuji in view of Applicants' alleged admissions on pages 1-3 of the instant application and further in view of Japanese Patent No. 52122281 to Ebara Infilco KK (hereinafter referred to as "Ebara"). This rejection is respectfully traversed.

The deficiencies of the teachings of Fuji, and the improper basis for the rejection based on Fuji in view the background section of the present application, have been summarized above. The deficiencies of the teachings of Ebara parallel the deficiencies of the teachings of Fuji. Ebara is directed to washing impurities from an impermeable diaphragm, and parallels Fuji in failing to disclose providing a drinkable beverage. Ebara also parallels Fuji in failing to even mention beer, let alone suggest a method for producing beer including filtering beer through a porous membrane until such time that the porous membrane is in need of cleaning, contacting the porous membrane with an enzyme selected from the group consisting of cellulases, amylases and combinations thereof in the absence of a protease or a glucanase to clean the porous membrane, and reusing the porous membrane to continue filtering beer.

Furthermore, Ebara discloses that, in the washing of impurities from an impermeable diaphragm, the enzyme can be protease or amylase, and thus teaches that the enzymes can be

used interchangeably. Thus, even assuming arguendo that the skilled artisan could be led from Fuji and the background section of the present specification to Ebara, the combination does not lead one of ordinary skill in the art to a method for producing beer including filtering beer through a porous membrane until such time that the porous membrane is in need of cleaning, contacting the porous membrane with an amylase in the absence of a protease to clean the porous membrane and then reusing the porous membrane to continue filtering beer.

Claims 26, 29, 30, 32 and 36 were rejected under 35 U.S.C. §103(a) as being unpatentable over Fuji in view of Applicants' alleged admissions and further in view of an article in the *Journal of Colloid and Interface Science* by Bolay et al., (hereinafter referred to as "Bolay"). This rejection is respectfully traversed.

The deficiencies of the teachings of Fuji, e.g., the failure of Fuji to even refer to producing beer, and the improper basis for the rejection based on Fuji in view the background section of the present application, have been summarized above.

Bolay also fails to refer to producing beer. Bolay merely discloses filtering dilute egg protein solutions and following the evolution of the electrical properties of membranes during the fouling process by stream potential measurements. Bolay fails to remedy the deficiencies of Fuji, and thus the combination fails to render the claimed invention obvious.

In view of these disclosures, Fuji, the background section of the present specification, and Bolay, whether taken alone or in combination, fail to disclose or suggest a method for producing beer including filtering beer through a porous membrane that progressively clogs during filtration, monitoring the streaming potential or zeta potential of the porous membrane as a measure of the extent of clogging of the porous membrane, halting filtration of the beer through the porous membrane before the porous membrane becomes fully clogged as determined by the streaming potential or zeta potential of the porous membrane, cleaning the porous membrane, and then reusing the porous membrane to continue filtering beer.

Thus, even assuming arguendo that one of ordinary skill in the art could be led from Fuji and the background section of the specification to Bolay, the combination would not lead those of ordinary skill in the art to the presently claimed invention. Accordingly, it is submitted the rejection is based on impermissible hindsight, and Applicants respectfully submit the obviousness rejection is improper and should be withdrawn.

In view of the amendment and remarks recited herein, the application is considered in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue.

In re Appln. of Pelz et al.  
Application No. 09/402,721

Should there remain any issues outstanding, the Examiner is invited to call the undersigned at her Washington, D.C. office.

Respectfully submitted,

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